Phocos CXCOM for CX and CXN

Instruction Manual

Contents

1. System Requirements 3
2. Setting up the Phocos CX/CXN Charge Controller Menu.....4
3. Installing the Drivers for the Phocos MXI 6
4. Installing the Software.....7
5. The Software 12
5.2 State of Charge Controller and Current Values 16
5.3.1 General Datalogger values 19
5.3.2 Datalogger data from last week, last month and last year.....20
5.4 System Performance.....24
5.5 Saving Data 26
5.6 Load and Save data to download it again in the software.....27
5.7 The Charge Controller Settings Menu 28
5.8 Setting Nightlight Functions 29
5.9 Use the help 32
6. Removing Phocos CXCOM 33
7. Technical Support Questions 34

1. System Requirements

Windows XP ,Vista, 7

This software runs with Windows XP, Vista and 7.
You need 6 MB free memory

2. Setting up the Phocos CX/CXN Charge Controller Menu

Program the Phocos CX/CXN Charge Controller according to the following diagrams.

First, push and hold the button on the charge controller until you see Picture 1. Then short push the button repeatedly until you see Picture 8. With each push of the button, the display will change as shown on the Picture on the right.

Picture 1.

Picture 2.

Picture 3.

Picture 4.

Picture 5.

Picture 6.

Picture 7.

Picture 8.

If you see this picture push and hold the button until you see one of the following Picture: 8.1, 8.2 or 8.3 (see below). Next, push and hold the button until you see the picture flashing. Then short push the button repeatedly until you see Picture 8.3

Picture 8.1.

Picture 8.2.

Picture 8.3.

After you see Picture 8.3, push and hold the button to save the setting. Short push the button once and you will see the Picture 8 again.

Short push the button again and you will see the Picture 9.

Picture 9.

Once you see Picture 9 short push button one more time. You will now be of the charge controller programming menu.

The Phocos CX/CXN Charge Controller is now ready for communication with the Phocos CXCOM software.

3. Installing the Drivers for the Phocos MXI

Please notice CXI Interface is replace now through MXI, but the installation and operation is the same for both.

In order to install drivers, you must connect the Phocos MXI cable to a USB port of your computer. To install drivers for the Phocos MXI cable it is not necessary to connect to the Phocos CX/CXN charge controller to the interface cable.

You only need to connect the interface cable with the USB port of your computer.
To install the drivers for the Phocos MXI, use the installation guide. The installation guide is located in the following folder:

\Phocos MXI driver\InstallationsGuide.pdf

4. Installing the Software

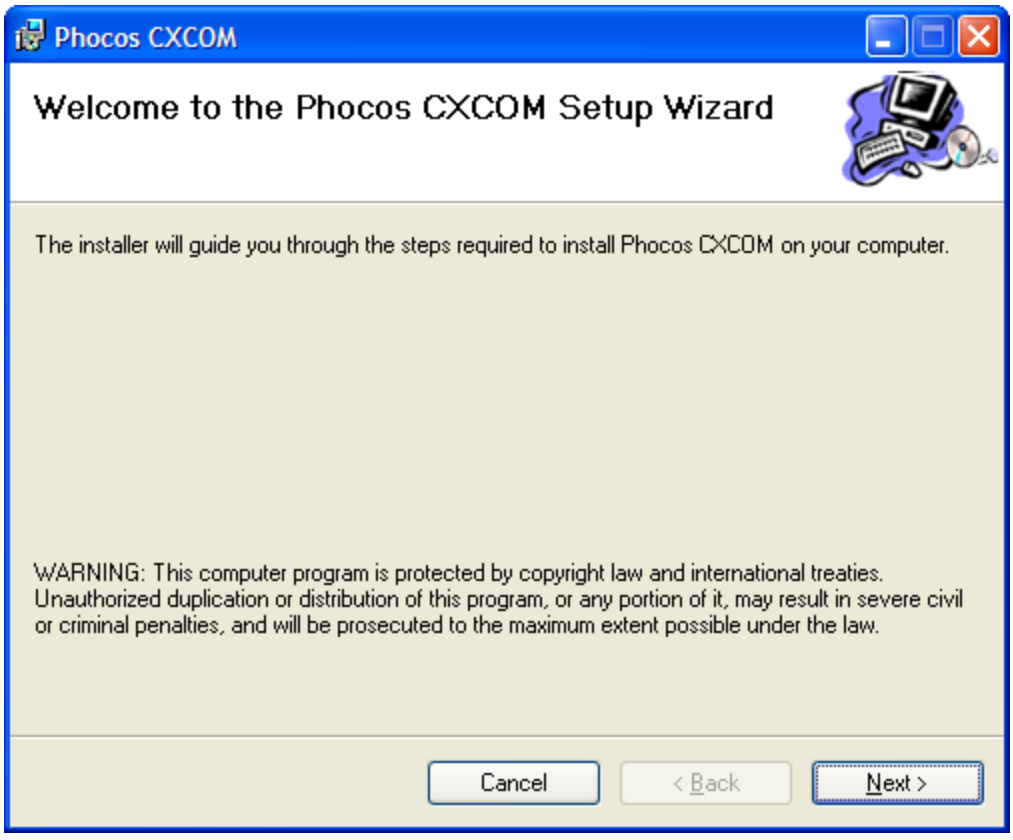
To install the software you have to start setup.exe on the CD-Rom.
Follow the instructions of the setup.

Step 1: Install the Microsoft .NET Framework

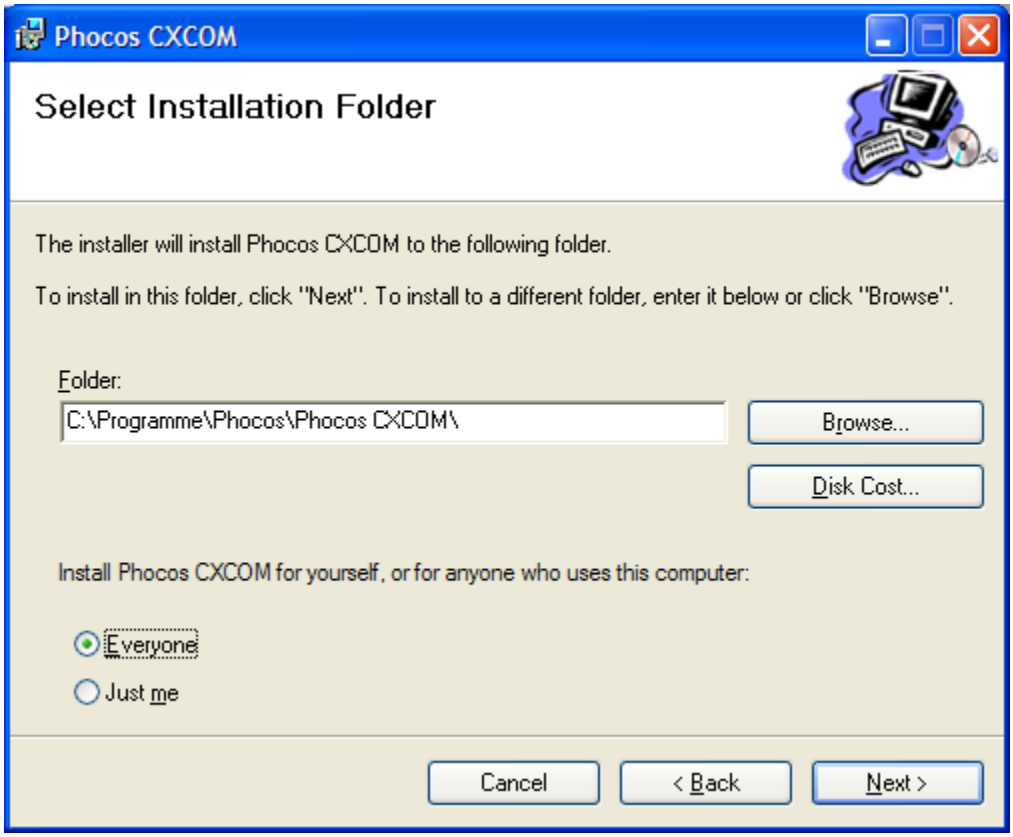
When you click on the CXCOM setup windows starts to download automatically framework 4.0 which is necessary to run the software. Please following the instructions.

Step 2: Start the setup.exe to install the software

Start setup and you will see the picture below. Click “Next” and you will get to the next win-dow.

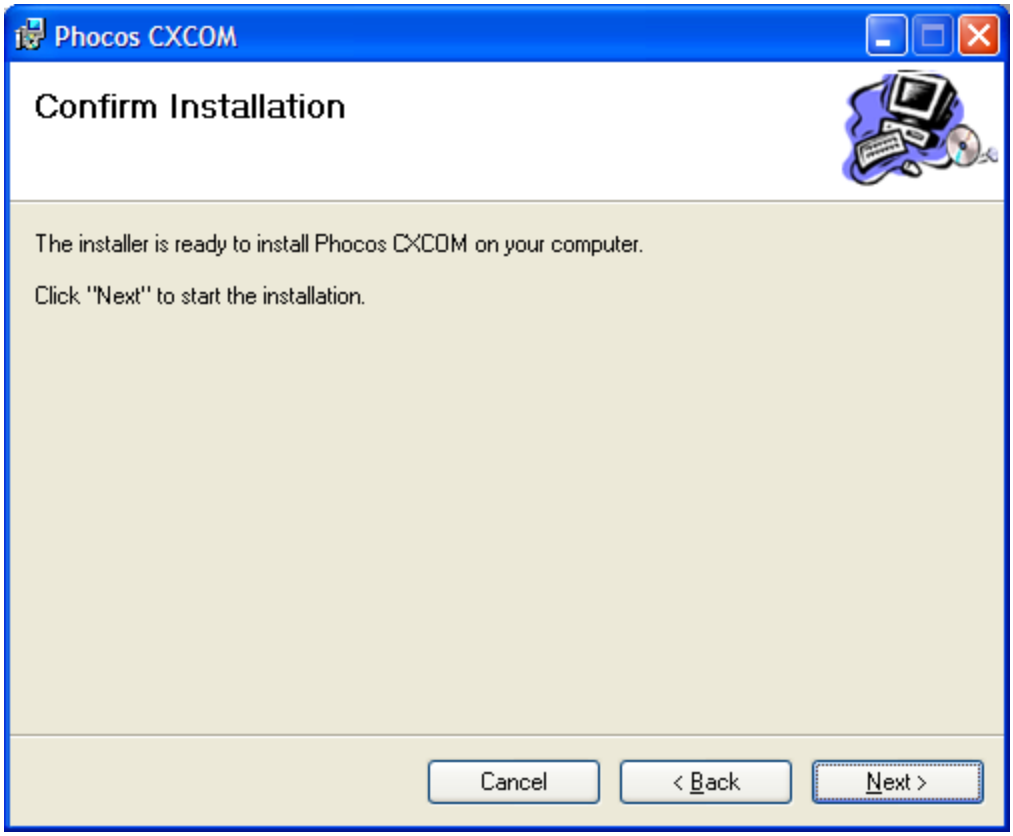

Phocos CXCOM
Welcome to the Phocos CXCOM Setup Wizard
The installer will guide you through the steps required to install Phocos CXCOM on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

In this window you can choose the folder the software should be installed to your computer.

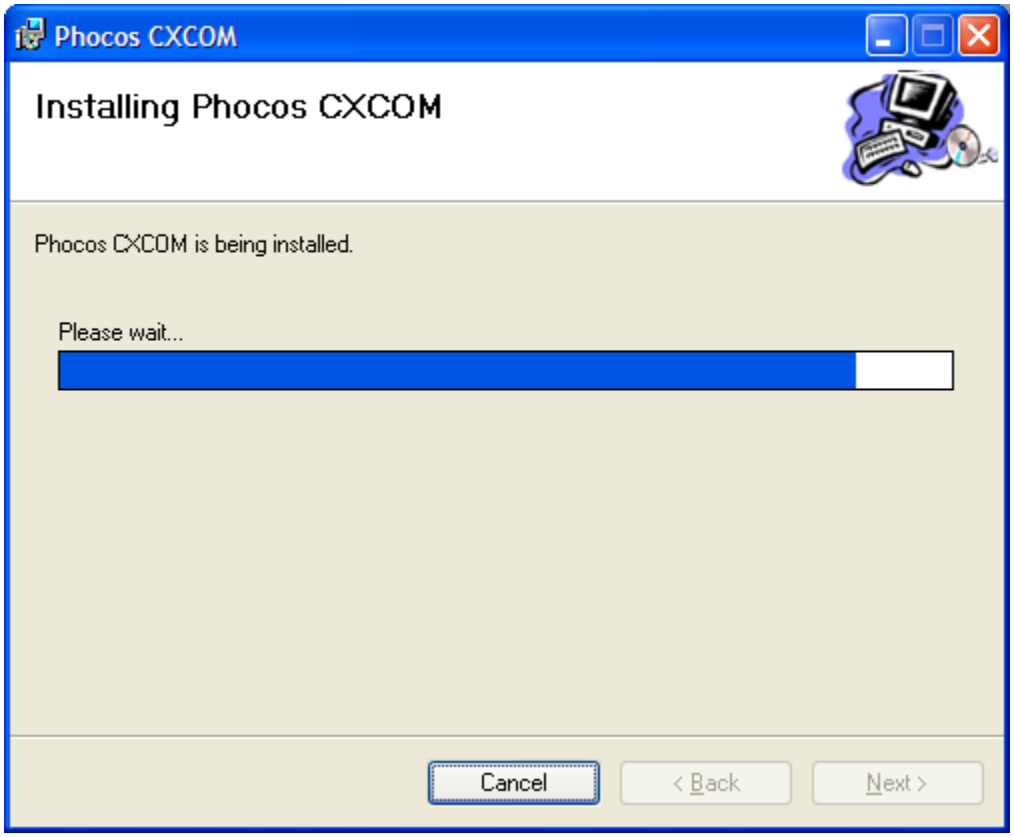

Phocos CXCOM
Select Installation Folder
The installer will install Phocos CXCOM to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Programme\Phocos\Phocos CXCOM\
Browse...
Disk Cost...
Install Phocos CXCOM for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

At the bottom of the window choose “Everyone” that all users can start the software.

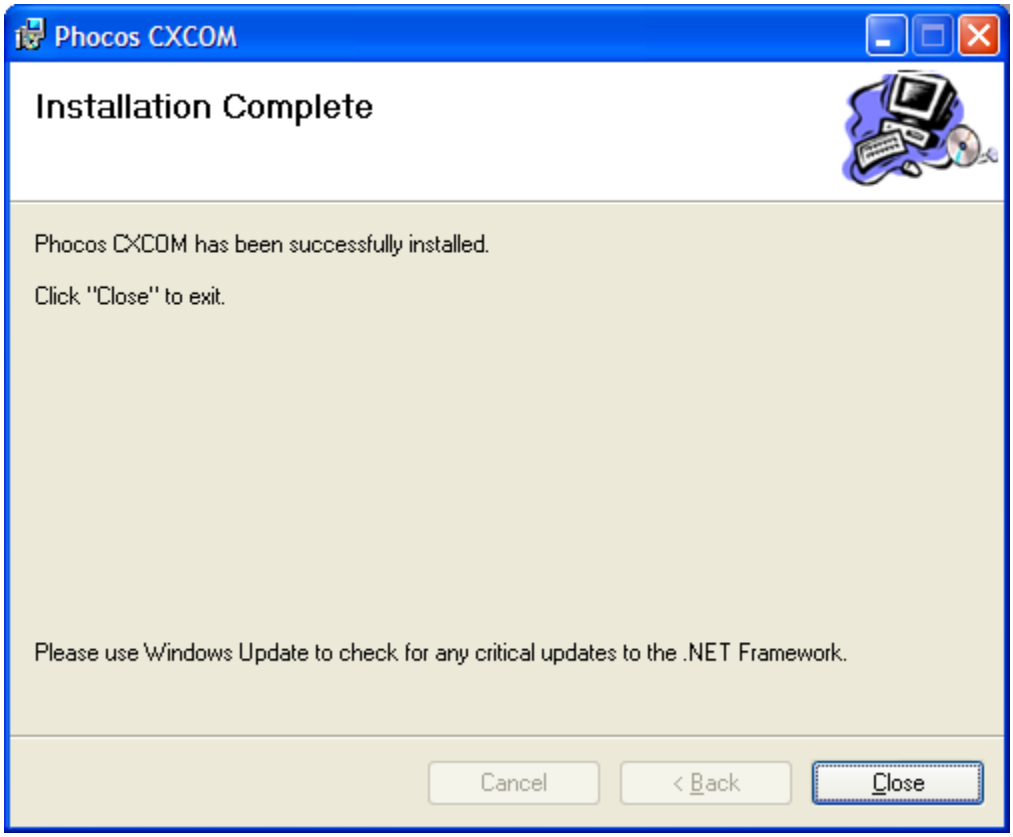
The window below shows to you that the installation is ready to begin. Click “Next”.


Phocos CXCOM
Confirm Installation
The installer is ready to install Phocos CXCOM on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

Phocos CXCOM software is being installed now.



Phocos CXCOM software has been successfully installed.


Phocos CXCOM
Installation Complete
Phocos CXCOM has been successfully installed.
Click "Close" to exit.
Please use Windows Update to check for any critical updates to the .NET Framework.
Cancel
< Back
Close

The software has now been installed on your computer. A shortcut icon will be added to the desktop and the Windows start menu.

Double click the Phocos CXCOM icon on the desktop and the software will run.

5. The Software

Choose the Comport and connect the Charge Controller. The CX and CXN have different Interfaces you can see in the pictures.

CX / CX-48V:

CXI Interface

Fig 5.1: Interface Phocos CX Chargecontroller

Connect the Phocos CXI cable with any USB Port on your computer and the other end with the Phocos CX Charge Controller Interface as shown in Fig. 5.1.

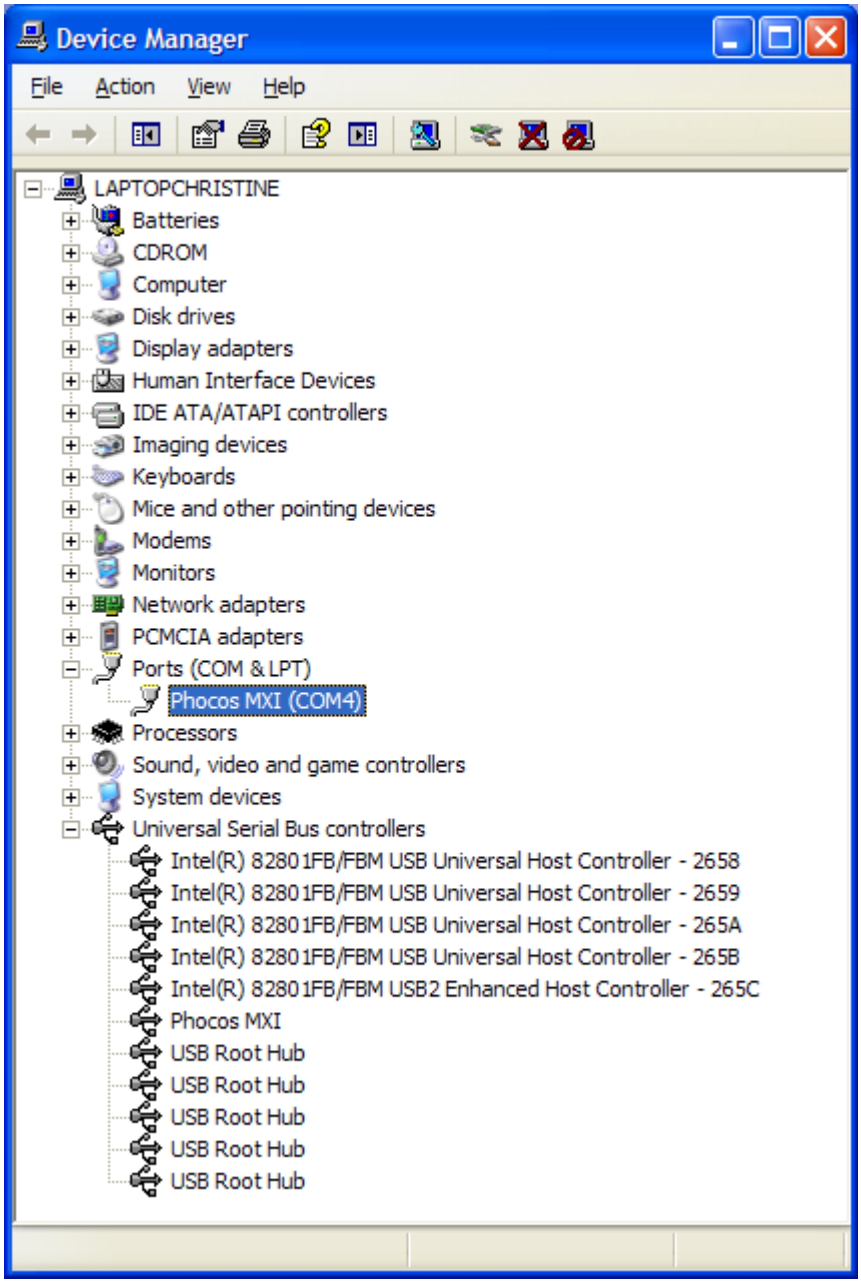
CXN:

CXI Interface CXT Interface

Fig 5.2: Interface Phocos CXN Chargecontroller

Connect the Phocos CXI cable with any USB Port on your computer and the other end with the CXI-CXN adapter which is the same box as the CXI. The other end you must connect with the left bush of the CXN, as you can see in picture 5.2.

Now, open the “Start” menu on your desktop. Select “Control Panel”, then “System”, “Hardware”, then “Device Manager.” You will find a window, as depicted in fig 5.3. There, you will see the Comport connector which is now installed on your computer. You must set this Comport connector in the software as shown in the next step (Figure 5.4).



Double click the Phocos CXCOM icon on your computer desktop to run the Phocos CXCOM software.

Click “Comport” on the menu bar at the top and set the correct port number. If your Com-port number is higher then 15, choose “manual.” Then, input your comport number.

Or you can click “automatic” and the software will search for the right comport automatically for you.

Please choose the controller type which you want to connect to the interface.

Fig 5.4: Controller type

5.2 State of Charge Controller and Current Values

You can switch between the different windows of the program by clicking on the buttons on the left side of the screen. (i.e. Status, Current Values, …, Menu Setting, Night Light).

If you click on “Status” you will see the Status window. Click on “Read from Charge Controller” and the window shows you some important details about the system as shown in Fig. 5.5.

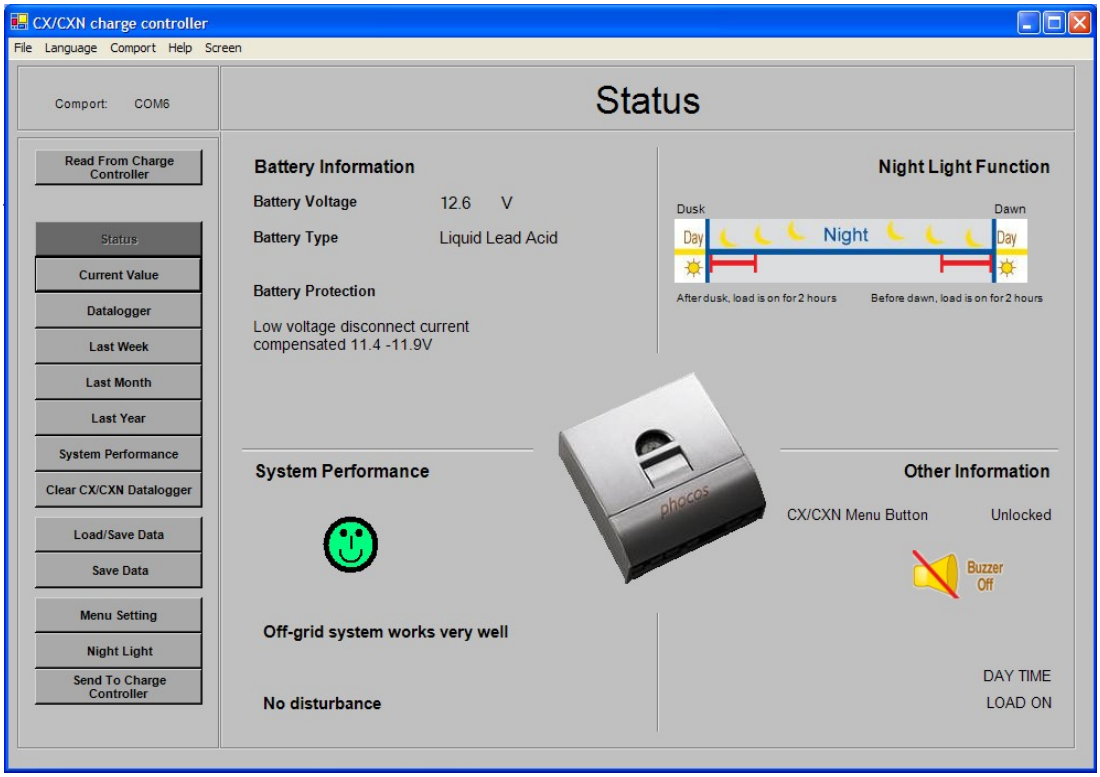


Fig.5.5: State display from the controller

- Battery type: Liquid Lead Acid or GEL
  Battery voltage
- The voltage when the charge controller should disconnect the load from the battery to protect it from deep discharge (Low Voltage Disconnect)
- Acoustic buzzer that sounds when the battery becomes empty
- Load settings for the nightlight function
- Button lock (the charge controller menu button is locked or not)
- Here you can see load on or off at the charge controller at the moment and if the charge controller knows it is currently NIGHT or DAY

Click on button “Current Values” to see the current status of system as shown in Fig. 5.6.

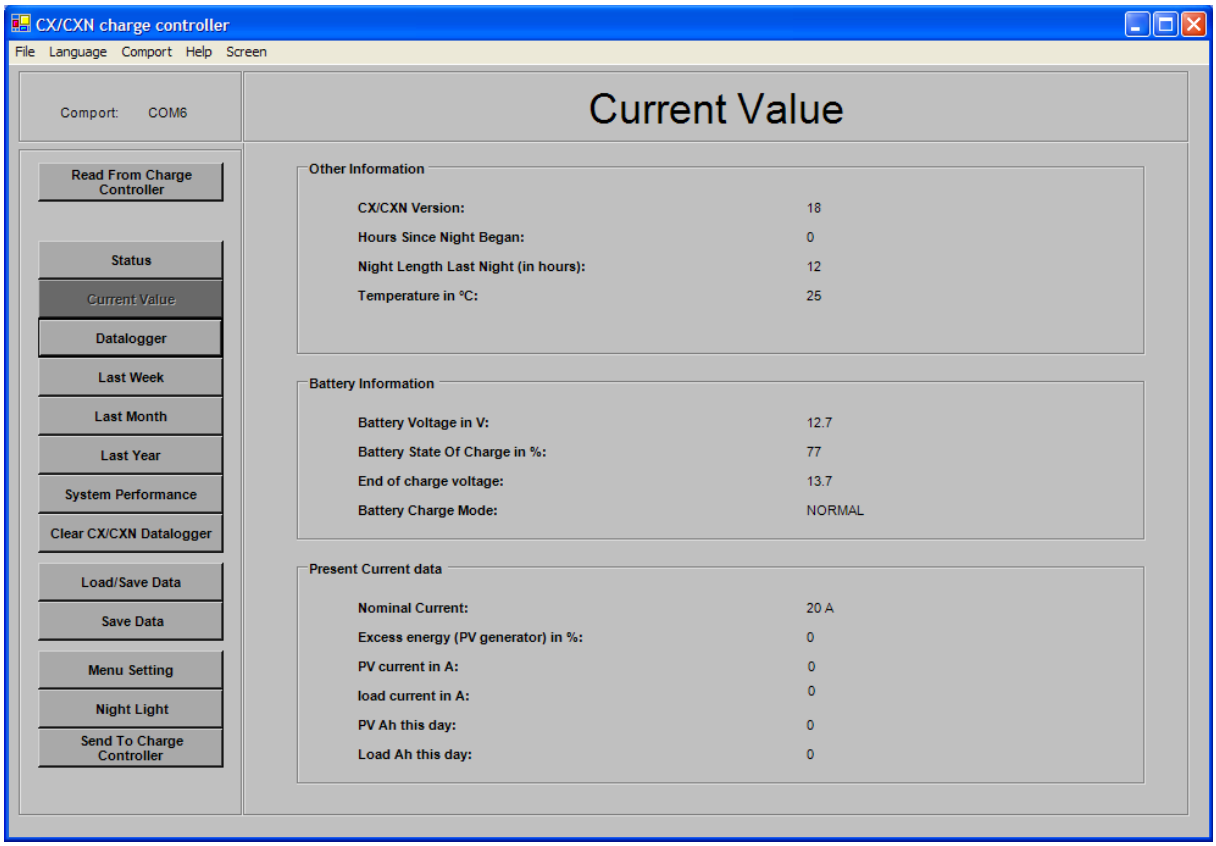


Fig.5.6: Current data of the charge controller

Explaining the Data in the “Current Value” window

Battery Information:

- “Battery voltage in V” is the current battery voltage
- Battery state of charge (SOC) in %
- SOC voltage change effected by setting adaptive in V
- End of Charge Voltage in V
- The Battery Charge mode
  (BOOST = 14.4V/28.8V or EQUAL= 14.8V/29.6V)

Other Information:

- Version number of the Phocos CX/CXN Controller
- Number of hours since beginning of the night
- Length of the last night in hours
- Temperature in °C

Present Current Data:

- Nominal current of the Phocos CX/CXN Charge Controller
- Excess energy available (energy of PV generator which the system can't use at the moment)
- Photovoltaic current in percent of the nominal current
- Load current in percent of the nominal current

5.3 Loading Datalogger data

You can see the Datalogger data of the charge controller if you click one of the following windows buttons:

- Datalogger
  Shows general data for the datalogger.
- Last Week
  Shows data for the last seven days (last week).
- Last Month
  Shows data for the last four weeks (last month).
- Last Year
  Shows data for the last twelve months (last year).

5.3.1 General Datalogger values

You can see the Datalogger data when you click on “Datalogger”.

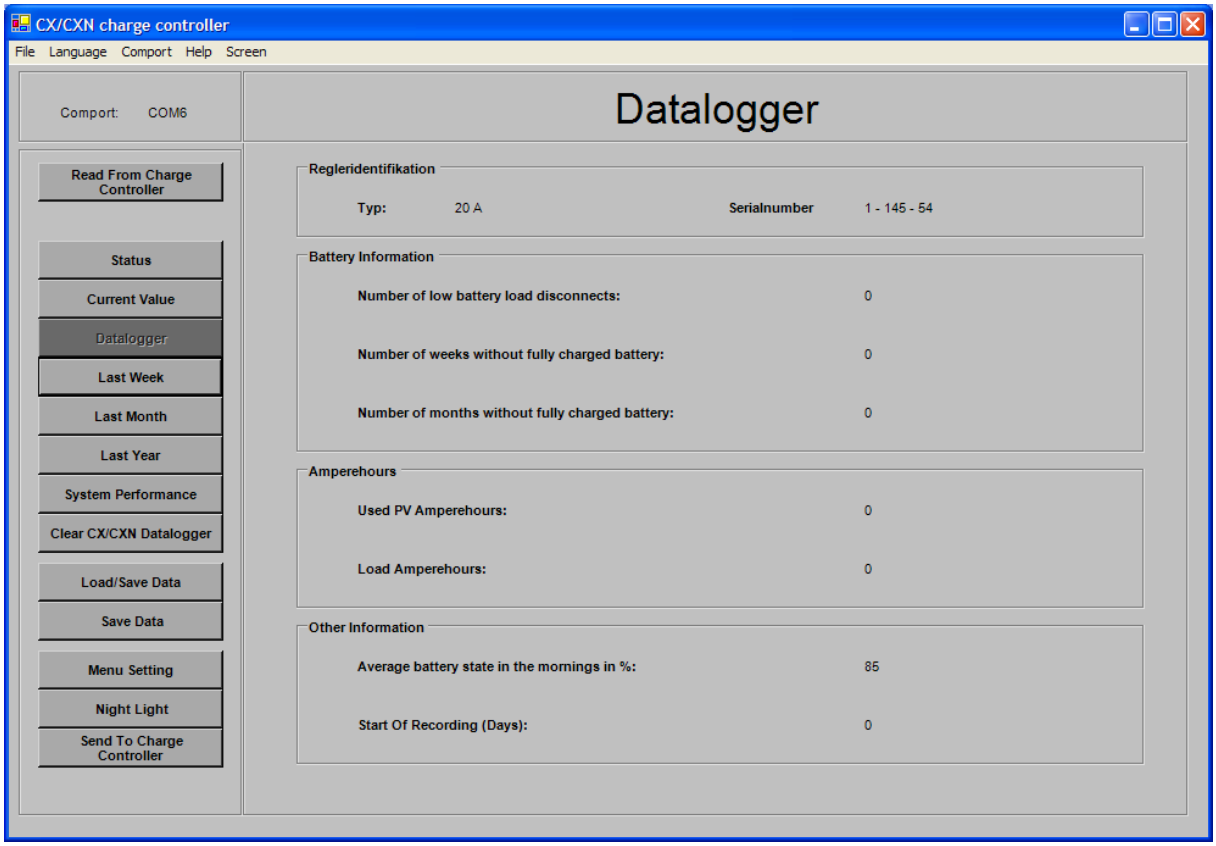


Fig.5.7: Data of the chargecontroller Datalogger

If you click “Read from Charge Controller,” you can download the current saved data from the Charge Controller Datalogger.

Battery Information:

- Number of low battery load disconnects (these are the disconnects to save the battery from deep discharge)
- Weeks / Months without a fully charged battery

Amperehours:

- Amperehours to the load and coming from the solar generator

Other Information:

- Average state of charge of the battery in the morning
- Number of days since the last time the Datalogger was cleared (recording days)

5.3.2 Datalogger data from last week, last month and last year

The windows “Last Week”, “Last Month” and “Last Year” display the same information at different resolutions.

Explanation based on data from last week.

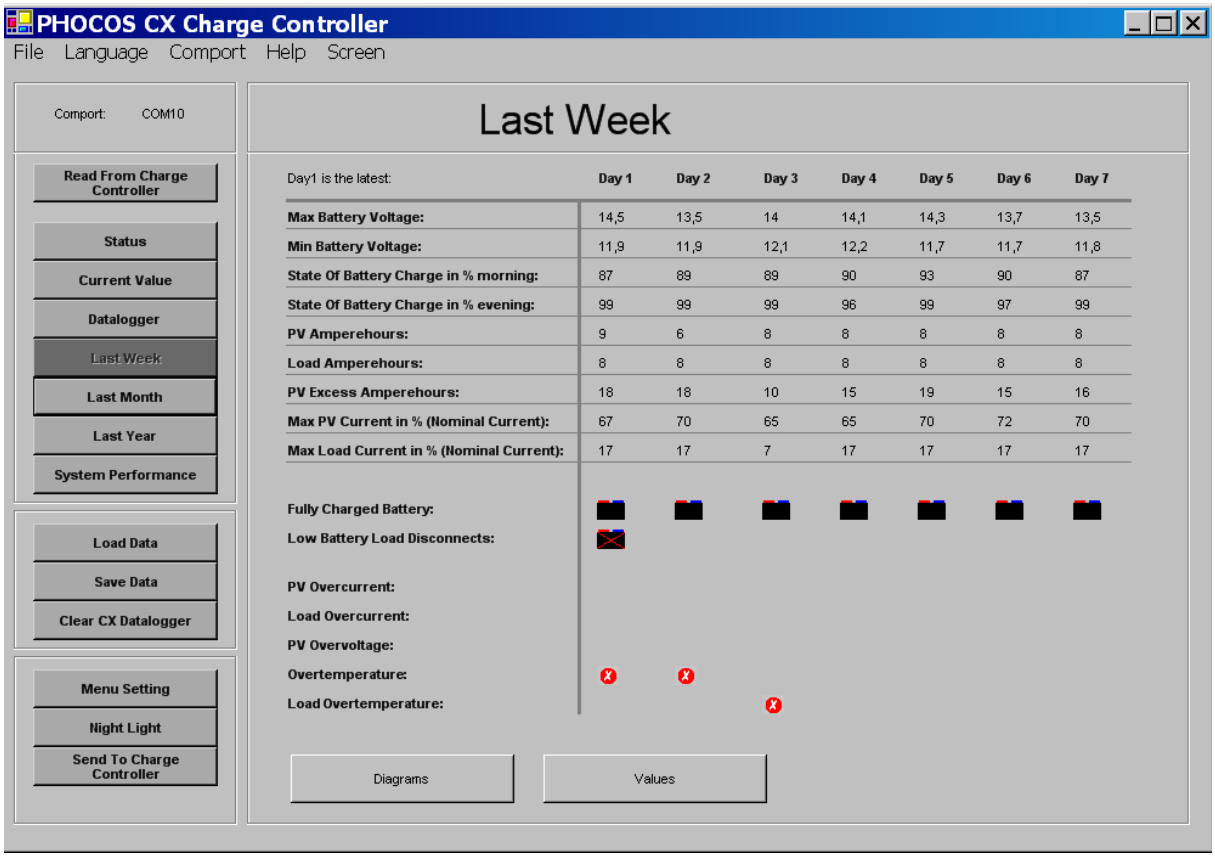

PHOCOS CX Charge Controller
File Language Comport Help Screen
Comport: COM10
Read From Charge Controller
Status
Current Value
Datalogger
Last Week
Last Month
Last Year
System Performance
Load Data
Save Data
Clear CX Datalogger
Menu Setting
Night Light
Send To Charge Controller
Last Week
Day1 is the latest:
Day 1 Day 2 Day 3 Day 4 Day 5 Day 6 Day 7
Max Battery Voltage: 14,5 13,5 14 14,1 14,3 13,7 13,5
Min Battery Voltage: 11,9 11,9 12,1 12,2 11,7 11,7 11,8
State Of Battery Charge in % morning: 87 89 89 90 93 90 87
State Of Battery Charge in % evening: 99 99 99 96 99 97 99
PV Amperehours: 9 6 8 8 8 8 8
Load Amperehours: 8 8 8 8 8 8 8
PV Excess Amperehours: 18 18 10 15 19 15 16
Max PV Current in % (Nominal Current): 67 70 65 65 70 72 70
Max Load Current in % (Nominal Current): 17 17 7 17 17 17 17
Fully Charged Battery:
Low Battery Load Disconnects:
PV Overcurrent:
Load Overcurrent:
PV Overvoltage:
Overtemperature:
Load Overtemperature:
Diagrams
Values

Fig.5.8: Data last week

If you look into the “Last Week” window you will see two buttons at the bottom of the window. There you can toggle between data and diagrams.

Explaining of the data:

- Maximum battery voltage each day
- Minimum battery voltage each day
- State of battery charge in % of the battery in the morning
- State of battery charge in % of the battery in the evening
- PV amperehours each day
- Load amperehours each day
- Excess energy produced by the solar generator each day
- Maximum current of the solar generator each day
- Maximum current of the load each day

An empty battery on this day will shown you this icon:

A fully charged battery on this day will shown you this icon:

Failures such as overtemperature, overcurrent etc. are indicated by this icon:

Click on the diagram button to look at four different diagrams created from stored data. Examples are shown in Fig. 5.9 and Fig. 5.10.

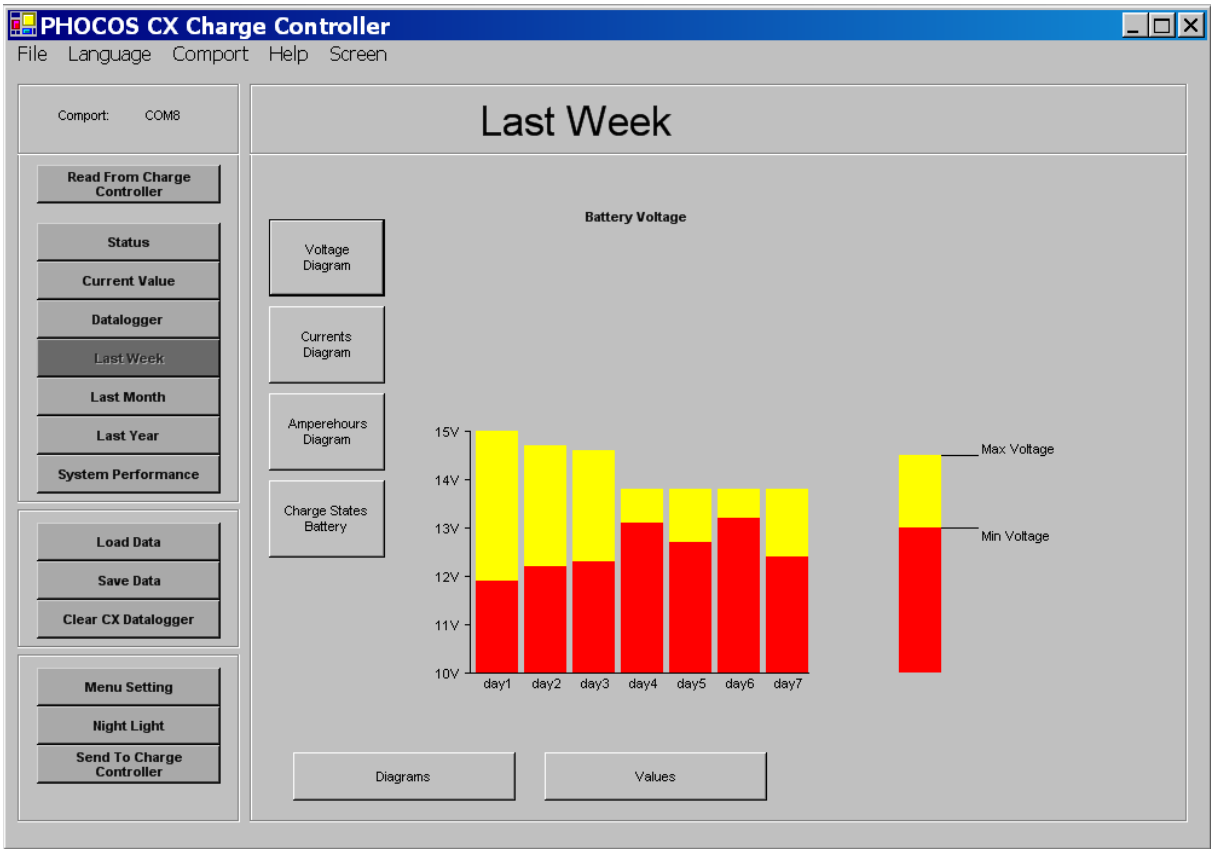


Fig.5.9: Diagram min. and max. battery voltage each day

Figure 5.10 is an example of the diagram depicting the battery state of charge (SOC) each day. The blue bars show the battery SOC in the evening. The orange bars show the battery SOC in the morning.

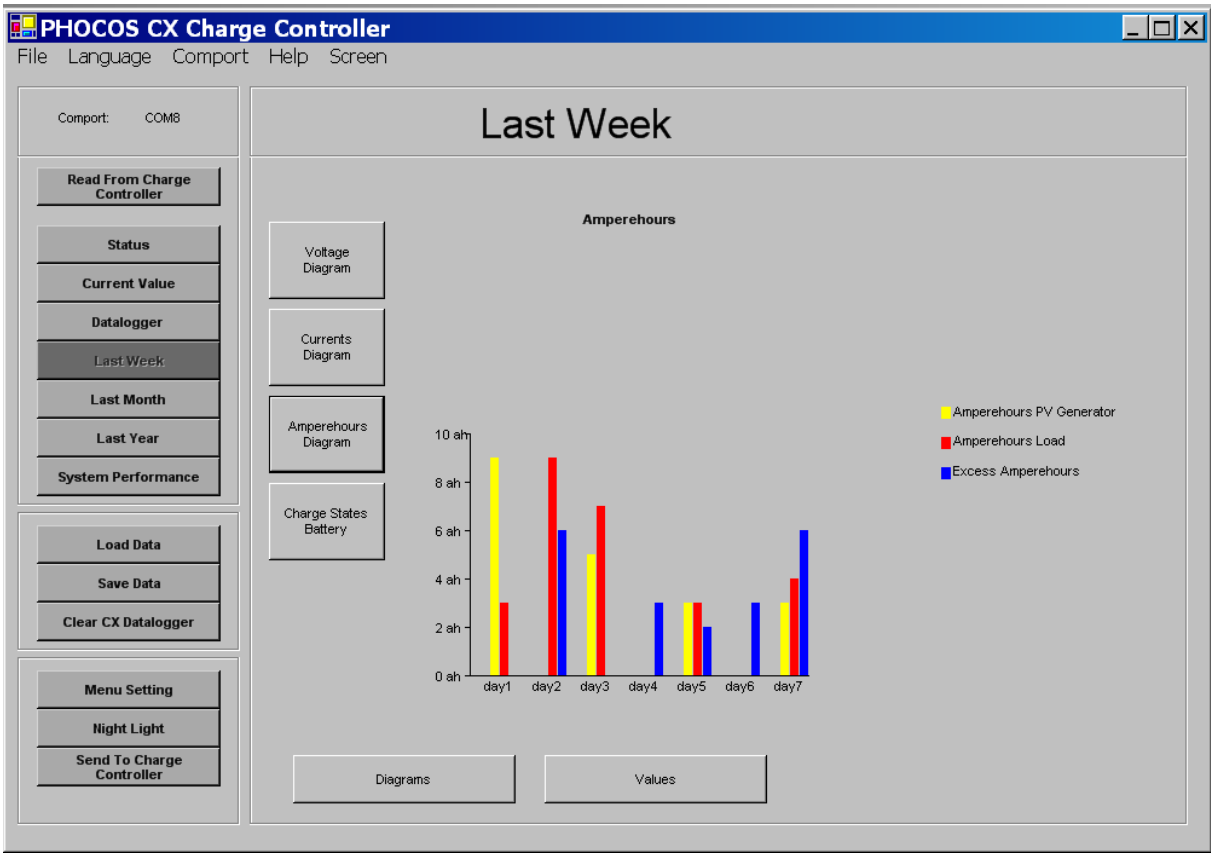


Fig.5.10: Battery state of charge each day

The data for “Last Month” and “Last Year” can also be obtained. These diagrams will be displayed by using the weekly or monthly averages for most data.

The “min” and “max” voltage diagram and “min” and “max” currents diagram are displayed as the minimum and maximum values for battery voltage and current flow values for each week or month.

5.4 System Performance

Click on “System Performance” and you will see a window similar to Fig. 5.11.

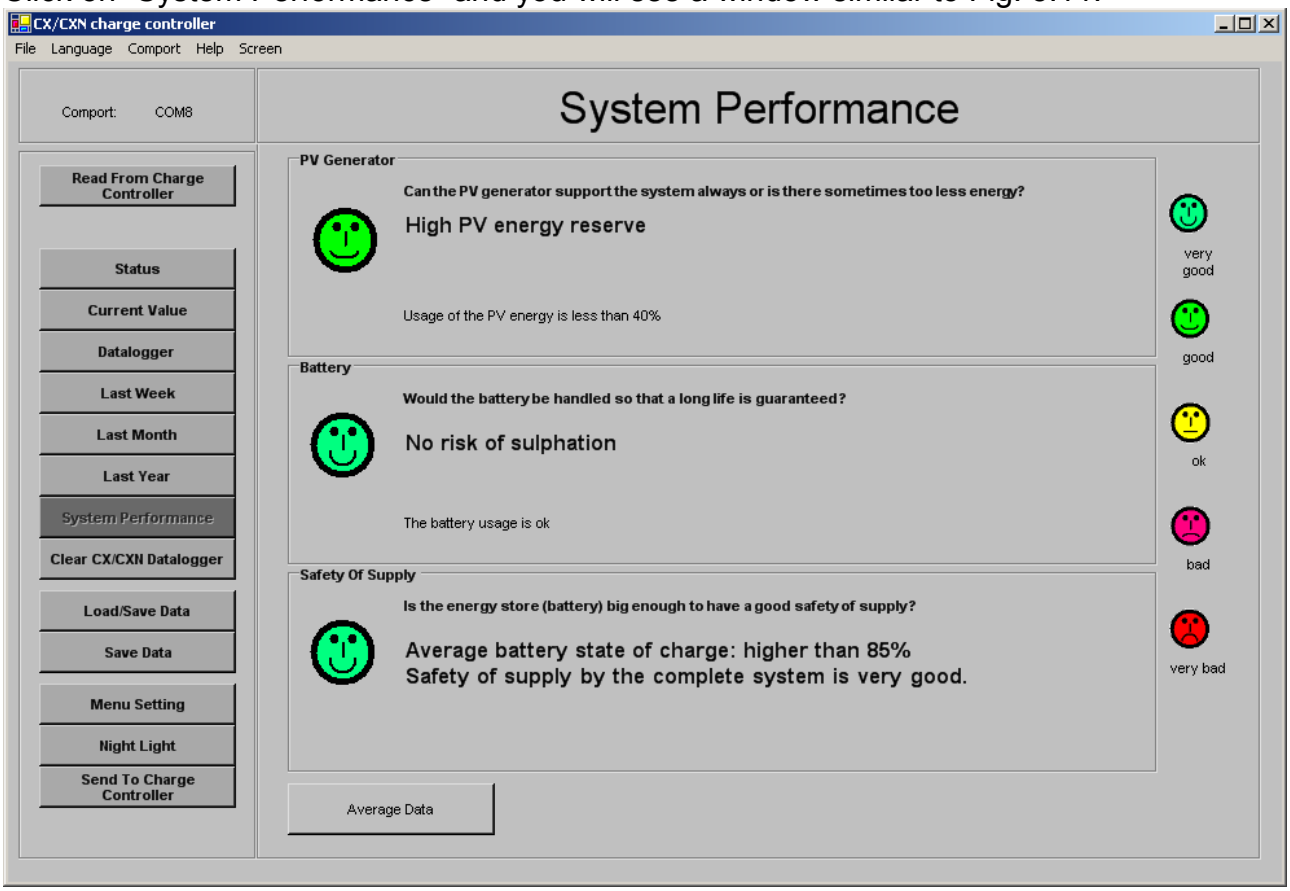


Fig.5.11: System Performance

The System Performance informs you how well the load was supported by energy produced by the system.

The following questions are answered:

- Is the PV generator able to supply the system with enough energy to power the load(s)?
- Is the battery being handled well enough to ensure maximum lifetime?
- Is the energy reserve capacity (battery) large enough to power the system?

Average data about the system:

If you click “Average data” in the “System Performance” window, you can view average data and possible disturbances in the system.

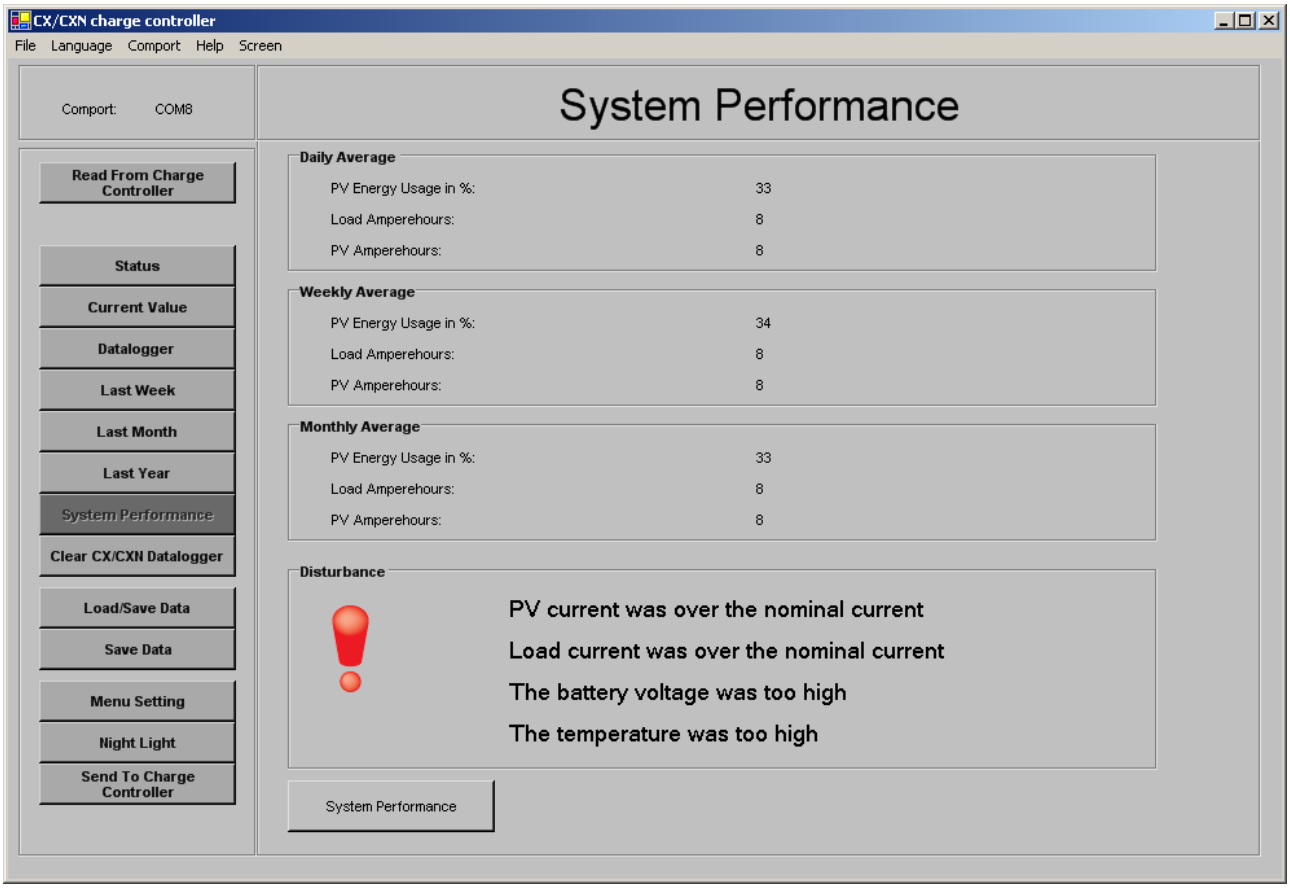


Fig.5.12: Average data

5.5 Saving Data

You also have the ability to save data from the datalogger to a Microsoft Excel™ (.csv) or a text (.txt) file. For this feature, click “save as Excel file” or “save as txt”.

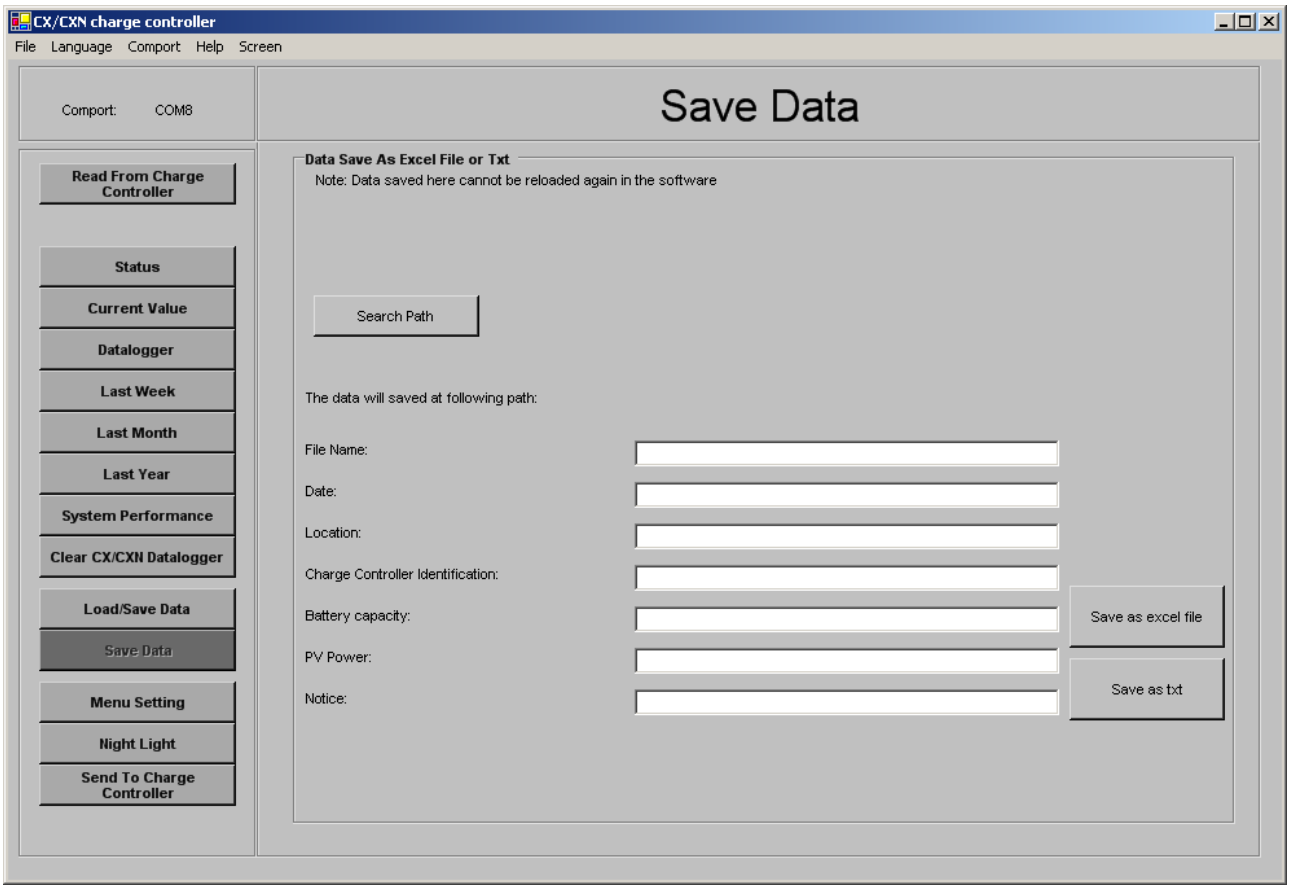


Fig.5.13: Save data

To save as an Excel or text file, first click “search path” and choose a path in the opened window. After this, click “ok,” then click “Take File Path”. The path will be shown to you. Now you must give the file a name. You can also save more details like battery capacity and/or power of solar generator.

5.6 Load and Save data to download it again in the software

You are able to reload data which you have saved before.

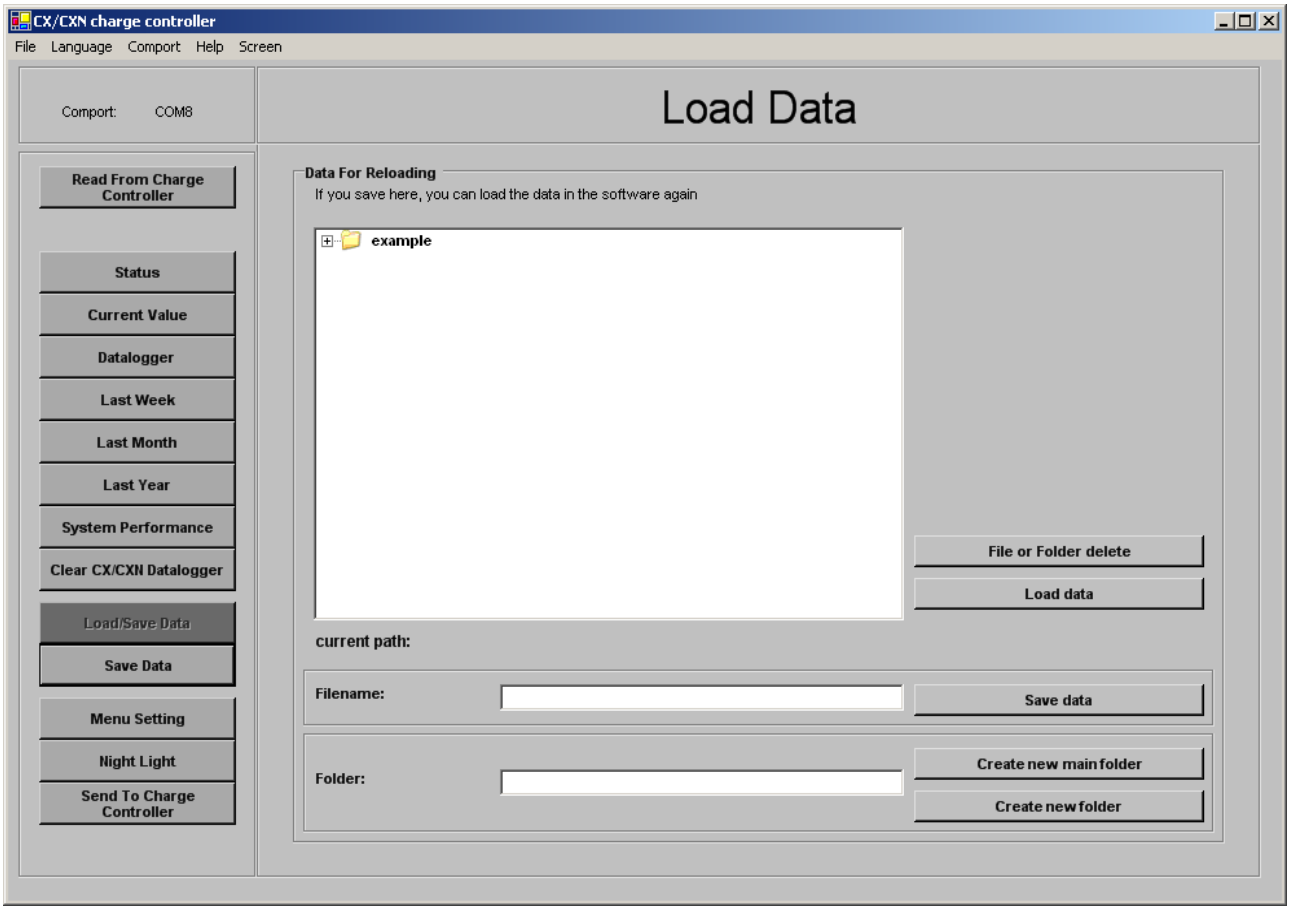


Fig.5.14: Load data

To do this you must click on the “Load data” window from the menu on the left. Choose the file you would like to view and click “load.”

5.7 The Charge Controller Settings Menu

The Menu Settings:

- Set the battery voltage that the charge controller should disconnect the load to protect the battery (Low Voltage Disconnect).
- State of battery charge buzzer on or off (when this function is on a buzzer beep by the different charge states of the battery)
- Lock the menu button (This feature allows you to disable the menu button on the controller)
- Select the appropriate battery type (GEL/AGM or liquid lead acid)
- Set load on or off (function only possible by the CXN and only when no night light function is activated)

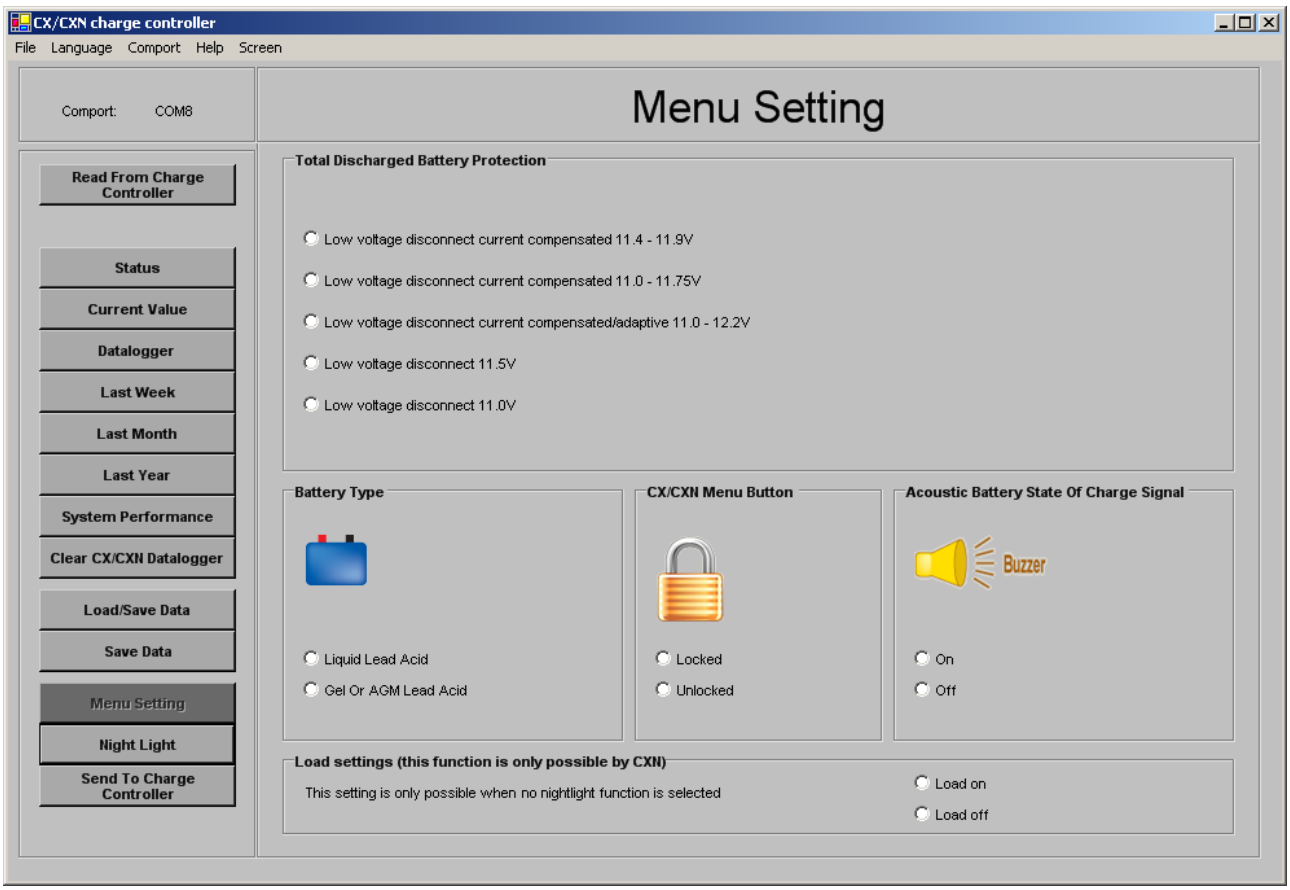


Fig.5.15: Menu settings

5.8 Setting Nightlight Functions

You have three options when setting the nightlight function. This is the feature that can switch the load on during a period of time at night. The load will be switched off during the day.

- Load on/off as a period of time before sunrise (hours), a period of time after sundown (hours) or set a specific time for load on/off
- Load on the whole night
- No nightlight function (This selection allows you to turn the load on/off manually using the menu button on the controller)

Load on hours before sunrise / hours after sundown

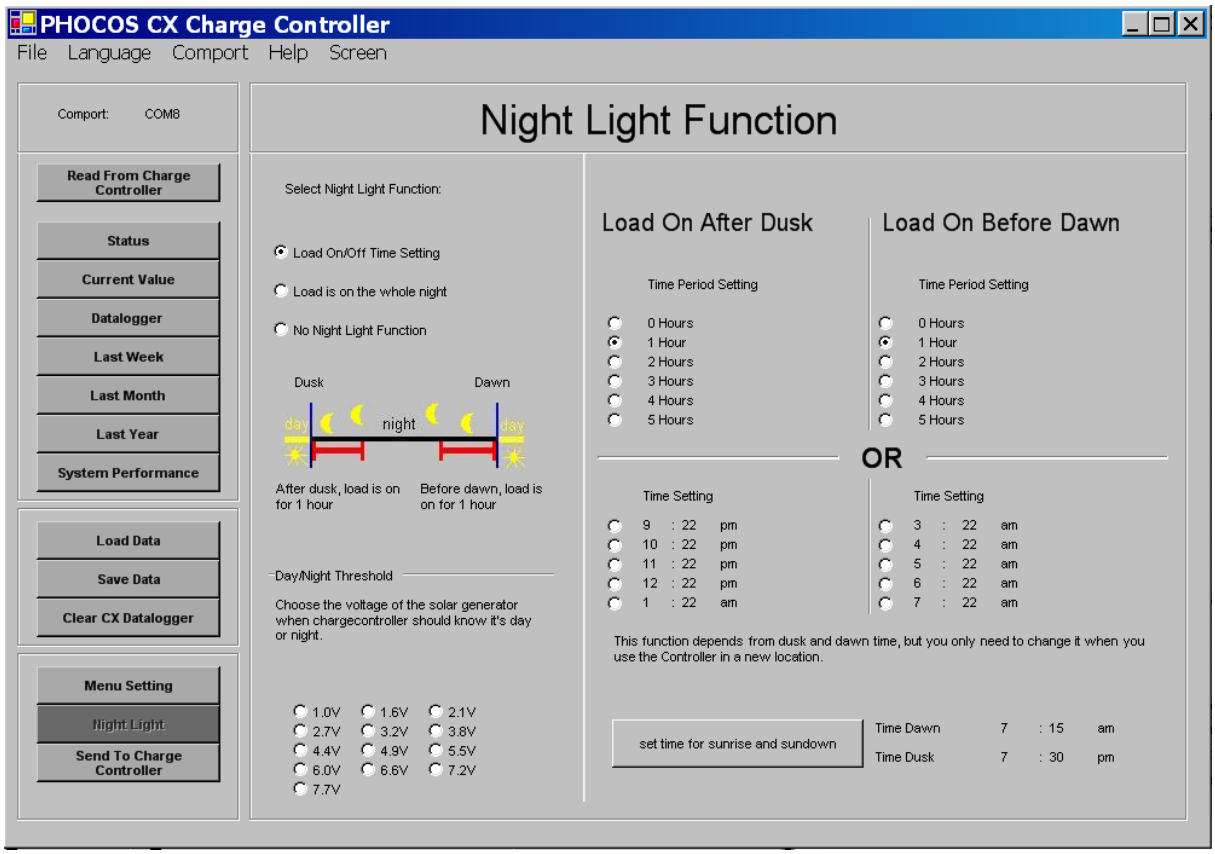


Fig.5.16: Setting nightlight function by hours before sunrise or hours after sundown

In this function you must set the hours before sunrise and hours after sundown when the load should be switched on. After this, click “Send to Charge Controller”. Then click “Read from Charge Controller” in order to verify that your settings have been changed.

Setting Times for Sunrise and Sundown

For this function, you must first set the time of sunrise and sundown. Then, choose the time when you want the load switched on.

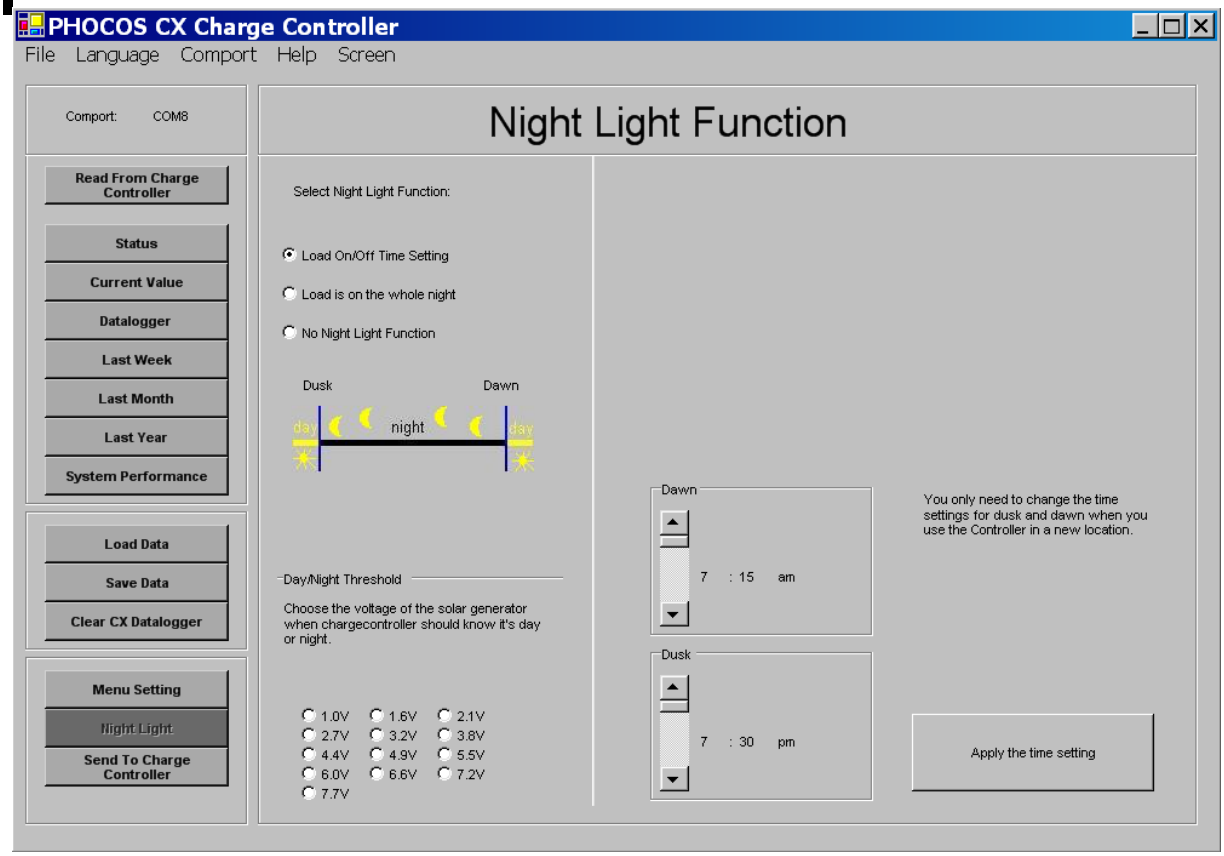


Fig.5.17: Setting times for sunrise/sundown

Setting Controller for Load on in Morning or Evening

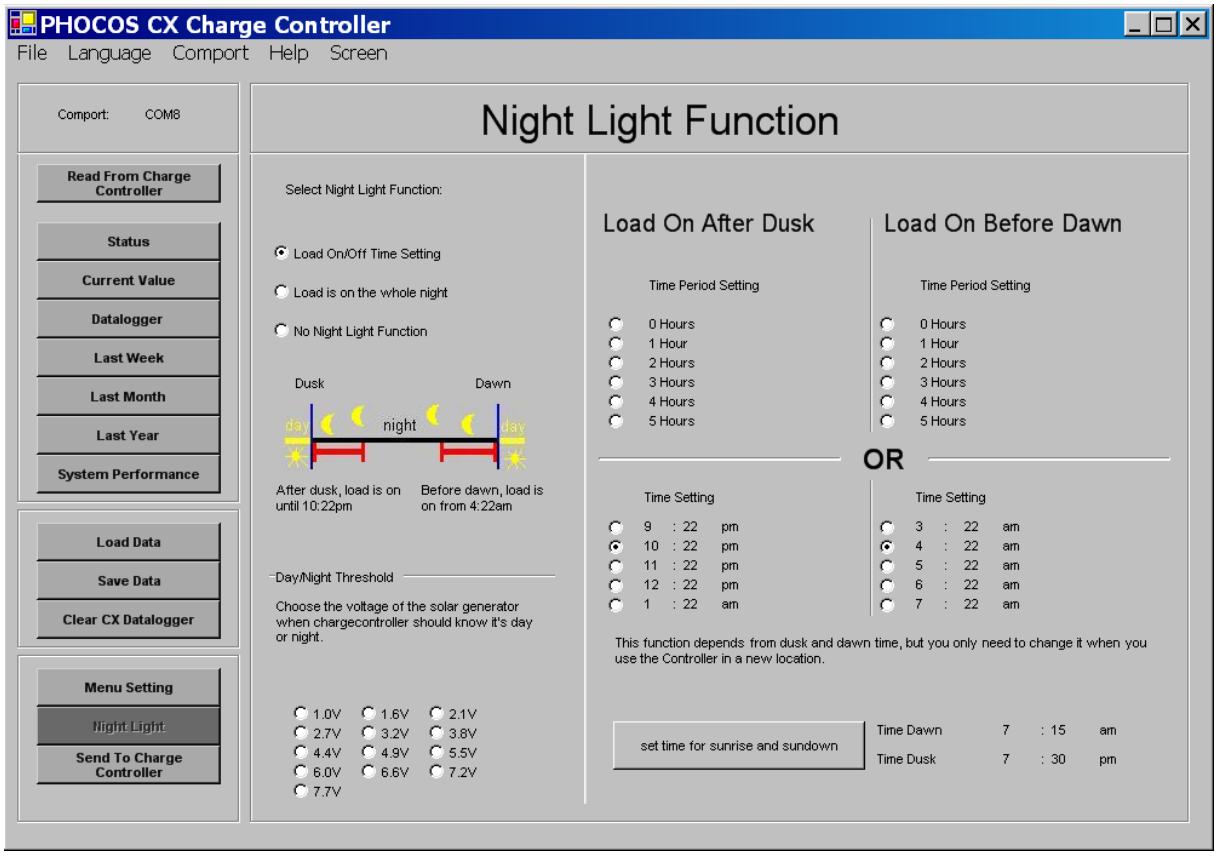


Fig.5.18: Setting the time for load on/off

5.9 Use the help

If you have problems, use the help function on the menu bar.

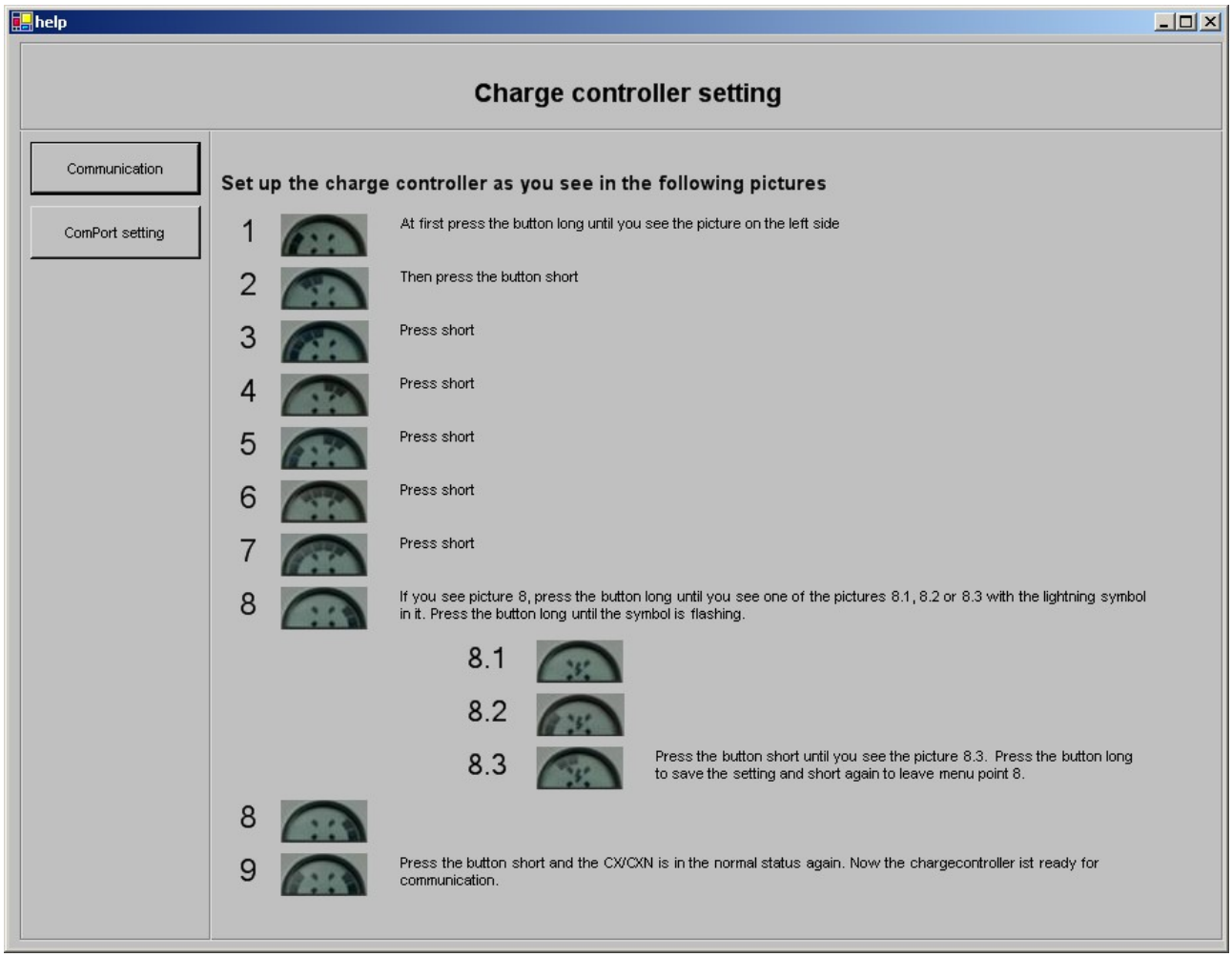
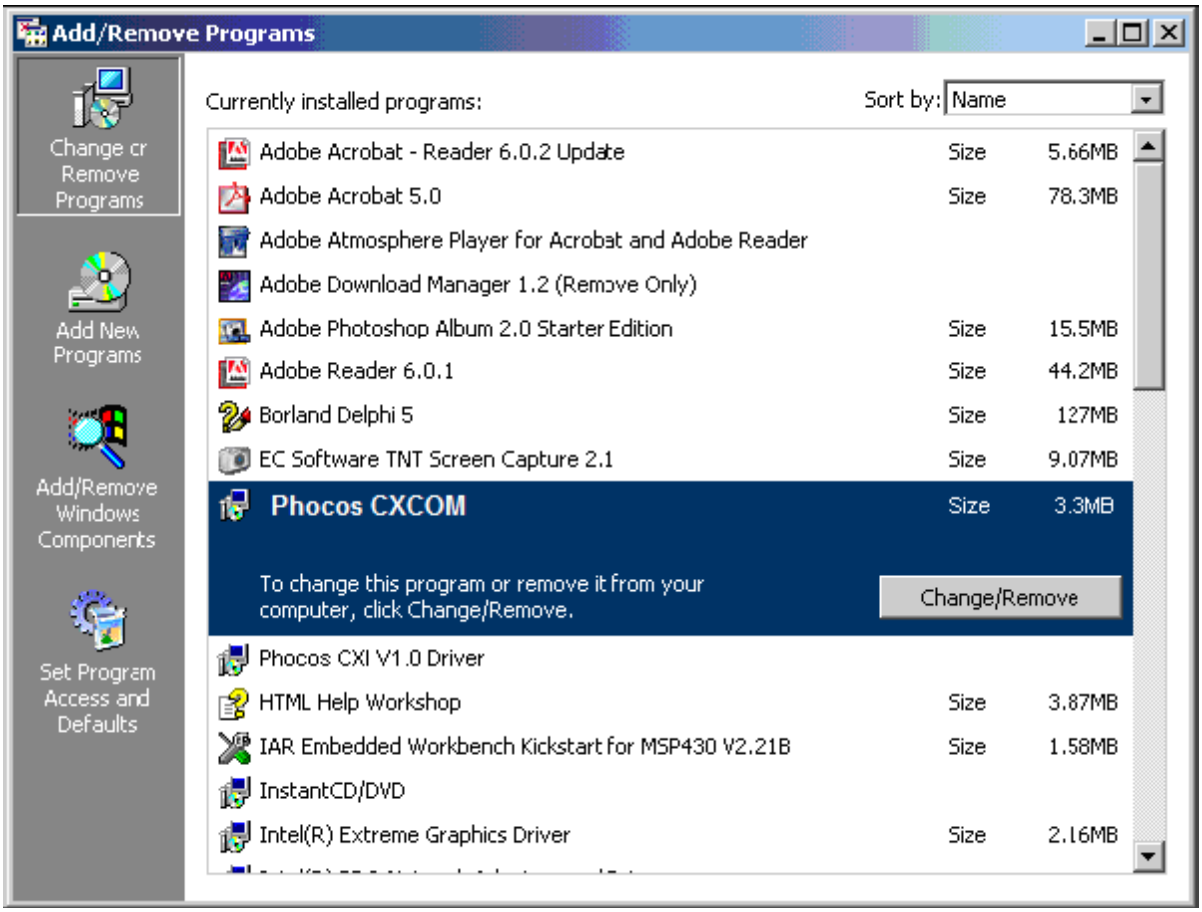
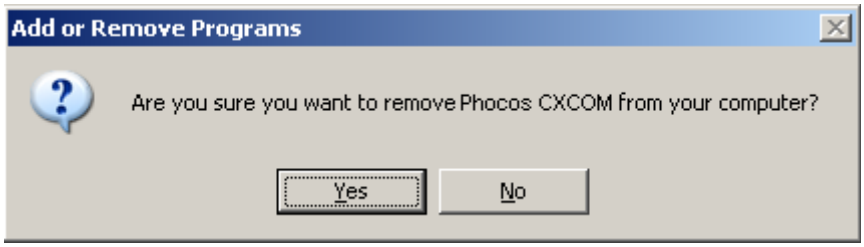

help
Charge controller setting
Communication
ComPort setting
Set up the charge controller as you see in the following pictures
1
At first press the button long until you see the picture on the left side
2
Then press the button short
3
Press short
4
Press short
5
Press short
6
Press short
7
Press short
8
If you see picture 8, press the button long until you see one of the pictures 8.1, 8.2 or 8.3 with the lightning symbol in it. Press the button long until the symbol is flashing.
8.1
8.2
8.3
Press the button short until you see the picture 8.3. Press the button long to save the setting and short again to leave menu point 8.
8
9
Press the button short and the CX/CXN is in the normal status again. Now the chargecontroller ist ready for communication.

Fig.5.19: Help menu

6. Removing Phocos CXCOM

To remove the software from your computer, go to “Start” menu – “setting” – “Control Panel” – “Add or remove programs”, select “Phocos CXCOM ” then click the “Remove” button.


Add/Remove Programs
Change or Remove Programs
Add New Programs
Add/Remove Windows Components
Set Program Access and Defaults
Currently installed programs:
Sort by: Name
Adobe Acrobat - Reader 6.0.2 Update Size 5.66MB
Adobe Acrobat 5.0 Size 78.3MB
Adobe Atmosphere Player for Acrobat and Adobe Reader
Adobe Download Manager 1.2 (Remove Only)
Adobe Photoshop Album 2.0 Starter Edition Size 15.5MB
Adobe Reader 6.0.1 Size 44.2MB
Borland Delphi 5 Size 127MB
EC Software TNT Screen Capture 2.1 Size 9.07MB
Phocos CXCOM Size 3.3MB
To change this program or remove it from your computer, click Change/Remove.
Change/Remove
Phocos CXI V1.0 Driver
HTML Help Workshop Size 3.87MB
IAR Embedded Workbench Kickstart for MSP430 V2.21B Size 1.58MB
InstantCD/DVD
Intel(R) Extreme Graphics Driver Size 2.16MB



Click “Yes”, then wait for about 1 minute, the Phocos CXCOM software will be removed from your system.

7. Technical Support Questions

If you have any questions about the software, please contact:

Phocos AG
Magirus-Deutz Str. 12
D 89077 Ulm
Germany
info@phocos.com
www.phocos.com